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EXAMINER	
LEUNG, CHRISTINA Y	

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2633	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/037,085	MAXHAM, KENNETH M.	
	Examiner	Art Unit	
	Christina Y. Leung	2633	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 December 2001*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-35* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-35* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *20 December 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *4-1-02*.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claim 28 is rejected under 35 U.S.C. 102(e) as being anticipated by Cardwell et al. (US 2002/00366988 A1).

Regarding claim 28, Cardwell et al. disclose a network design tool for a wavelength division multiplexed optical network in which each optical node is capable of receiving a plurality of optical amplifiers (page 5, paragraphs [0055]-[0058]; page 7, paragraphs [0075]-[0076]), comprising:

selection means for placing at least one optical amplifier to form an initial placement of amplifiers in accord with an optical power criteria (page 5, paragraphs [0056]-[0058]);

means for forming a set of optical amplifier placement configurations in accord with the initial placement of the selection means (Figure 5; page 3, paragraph [0026]; page 6, paragraph [0065] and [0068]; page 7, paragraphs [0071]-[0078]; page 8, paragraphs [0079]-[0082]); and

quality of service means to analyze the quality of service of each amplifier placement configuration (page 6, paragraph [0068]; page 7, paragraph [0076]).

Examiner notes that Cardwell et al. disclose "forming a set of amplifier placement configurations" by forming a set of possible ring networks, wherein each possible ring network

includes amplifiers placed in accord with an optical power criteria (page 3, paragraph [0026]; page 7, paragraphs [0075]-[0076]).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 29-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cardwell et al. in view of Ramamurthy et al. ("Optimizing Amplifier Placements in a Multiwavelength Optical LAN/MAN: The Unequally Powered Wavelengths Case," IEEE/ACM Transactions on Networking, Vol. 6, No. 6, December 1998, pp. 755-767).

Regarding claim 29, Cardwell et al. disclose a network design tool (Figure 5), comprising:

a network configuration module (including step 111 in Figure 5; page 7, paragraph [0071]) for configuring optical components of nodes of an optical network to add, drop, and pass-through wavelength channels according to a channel map;

an amplifier placement selection module (including step 116; page 7, paragraph [0076]) for selecting a subset of amplifier placement configurations from the set of all possible amplifier placement configurations; and

a quality of service analysis module (including step 118; page 8, paragraph [0079]) configured to analyze the quality of service for each amplifier configuration of the subset of

amplifier placement configurations and select an amplifier configuration having a desired quality of service.

Cardwell et al. do not specifically disclose selecting a minimum number of amplifiers, but they do disclose attempting to minimize overall cost (page 2, paragraph [0021]), and it is well understood in the art that reducing the number of amplifiers would generally contribute to reducing an overall cost of the designed system.

Ramamurthy et al. teach a related system for designing an optical wavelength division multiplexing network (Abstract) including placing optical amplifiers, and they further teach minimizing the number of amplifiers placed in the network (Abstract, particularly lines 7-9; see also page 756, section "B. Problem Definition").

It would have been obvious to a person of ordinary skill in the art to select a minimum number of amplifiers as taught by Ramamurthy et al. in the system disclosed by Cardwell et al. in order to minimize the cost of the designed network and also in order to advantageously reduce associated noise and maintenance considerations for each amplifier (Ramamurthy et al., page 756, second paragraph under section "B. Problem Definition").

Regarding claim 30, Cardwell et al. disclose that the amplifier placement selection module places amplifiers proximate high loss regions of the optical network (page 6, paragraph [0068]).

Regarding claim 31, Cardwell et al. disclose that the amplifier placement selection module eliminates from consideration amplifier configurations belonging to branches of a decision tree likely to have unacceptably low power for at least one wavelength channel in at least one node (page 6, paragraph [0068]; page 7, paragraphs [0076]-[0077]).

5. Claims 1-3, 7-10, 14, 32 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cardwell et al. in view of Beine et al. (US 6,304,347 B1).

Regarding claim 1, Cardwell. et al. disclose for a wavelength division multiplexed optical network having a plurality of optical nodes coupled by spans (Figures 1-4), a computer implemented method (Figure 5) of selecting amplifier placement, the method comprising:

selecting an optical power criterion for constraining placement of one or more optical amplifiers in the optical network, the optical power criterion being indicative of a sufficient minimum received power in at least one receiver (page 7, paragraph [0076]);

placing at least one amplifier in accord with the optical power criterion to form an initial placement of amplifiers (page 7, paragraph [0076]); and

determining a set of amplifier placement configurations which are consistent with the initial placement of amplifiers (page 8, paragraphs [0079]-[0081]).

Regarding claim 8, Cardwell et al. disclose for a wavelength division multiplexed optical network having a plurality of optical nodes coupled by spans (Figures 1-4), a computer implemented method (Figure 5) of selecting amplifier placement, the method comprising:

selecting a plurality of light paths of the optical network (page 6, paragraphs [0062]-[0064]);

for each selected light path, placing optical amplifiers in node locations requiring optical amplification to form an initial placement of amplifiers (page 7, paragraph [0076]); and

determining a set of amplifier placement configurations which are consistent with the initial placement of amplifiers (page 8, paragraphs [0079]-[0081]).

As similarly discussed above with regard to claim 28, Examiner notes that Cardwell et al. disclose "determining a set of amplifier placement configurations" by forming a set of possible ring networks, wherein each possible ring network includes amplifiers placed in accord with an optical power criteria (page 3, paragraph [0026]; page 7, paragraphs [0075]-[0076]).

Regarding both claims 1 and 8, Cardwell et al. disclose that each node is capable of generally receiving amplifiers, but they do not specifically disclose pre-amplifiers and post-amplifiers. However, Beine et al. teach a related optical network with nodes coupled by fiber optic spans (Figure 21) and further teach nodes capable of receiving at least one optical pre-amplifier for each input fiber and at least one optical post amplifier for each output fiber (such as amplifiers 2102 and 2106, for example; column 36, lines 38-53). It would have been obvious to a person of ordinary skill in the art to specifically have the nodes disclosed by Cardwell et al. capable of receiving both pre- and post-amplifiers as suggested by Beine et al. in order to provide more flexibility in the placement of the amplifiers and thereby better optimize the design of the network.

Regarding claims 7 and 14, Cardwell et al. in view of Beine et al. suggest a network designed by the method of claim 1 as discussed above.

Regarding claims 2 and 9, Cardwell et al. disclose that the optical power criterion comprises:

placing an amplifier in a pre-selected node location responsive to an optical loss associated with at least one portion of a lightpath of the network exceeding a threshold loss (page 7, paragraph [0076]).

Regarding claims 3 and 10, Cardwell et al. disclose the optical criterion comprises:

analyzing the power level of at least one wavelength channel from a source node and placing an amplifier at a node location prior to a first node location in which the power level decreases below a threshold power level (page 7, paragraph [0076]).

Regarding claim 32, Cardwell et al. disclose a wavelength division multiplexed optical network (Figures 1-4), comprising:

at least four optical nodes coupled by fiber optic spans, each node having an optical add/drop multiplexer (Figure 4 shows four nodes 18, 20, 22b, and 24b with add/drop multiplexers) and

at least one optical amplifier disposed in the nodes, wherein the configuration of the at least one optical amplifier is selected and validated by a design tool (page 7, paragraph [0076]).

Cardwell et al. disclose that each node is capable of generally receiving amplifiers, but they do not specifically disclose pre-amplifiers and post-amplifiers. However, Beine et al. teach a related optical network with nodes coupled by fiber optic spans (Figure 21) and further teach nodes capable of receiving at least one optical pre-amplifier for each input fiber and at least one optical post amplifier for each output fiber (such as amplifiers 2102 and 2106, for example; column 36, lines 38-53). It would have been obvious to a person of ordinary skill in the art to specifically have the nodes disclosed by Cardwell et al. capable of receiving both pre- and post-amplifiers as suggested by Beine et al. in order to provide more flexibility in the placement of the amplifiers and thereby better optimize the design of the network.

Regarding claim 34, Cardwell et al. disclose that the network has at least five nodes (Figures 1-4 show more than five nodes in a network).

6. Claim 33 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cardwell in view of Beine et al. as applied to claim 32 above, and further in view of Sharma et al. (US 6,046,833 A).

Regarding claim 33, Cardwell et al. in view of Beine et al. describe a system as discussed above with regard to claim 32. Cardwell et al. further disclose OC-3, OC-12, and OC-48 services (page 9, Table 2) but do not specifically disclose OC-192 compliant services. However, OC-192 compliant services are also well known in the art in optical networks, as Sharma et al. specifically suggest (column 2, lines 11-24). It would have been obvious to a person of ordinary skill in the art to specifically use OC-192 compliant services as taught by Sharma et al. in the network described by Cardwell et al. in view of Beine et al. in order to accommodate greater transmission rates and deliver large amounts of communication more efficiently.

7. Claims 4-6, 11-13, and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cardwell in view of Beine et al. as applied to claims 1, 8, and 32 above, and further in view of Ramamurthy et al.

Regarding claims 4-6 and 11-13, Cardwell et al. in view of Beine et al. describe a method as discussed above with regard to claims 1 and 8 respectively. Regarding claims 5-6 and 12-13 in particular, Cardwell et al. further teach performing a quality of service analysis upon each of the amplifier placement configurations; and selecting the amplifier placement configuration having a desired level of service (page 7, paragraph [0076]).

Cardwell et al. do not specifically disclose selecting the amplifier placement having a minimum number of optical amplifiers or that the optical power criterion comprises calculating an aggregate loss or determining an aggregate number of amplifiers.

However, Ramamurthy et al. teach a related system for designing an optical wavelength division multiplexing network (Abstract) including placing optical amplifiers, and they further teach minimizing the number of amplifiers placed in the network by calculating an aggregate loss of the network spans and nodes and determining an aggregate number of amplifiers required for the aggregate optical loss (Abstract, particularly lines 7-9; see also page 756, section "B. Problem Definition").

Cardwell et al. already disclose attempting to minimize overall cost (page 2, paragraph [0021]), and it is well understood in the art that reducing the number of amplifiers would generally contribute to reducing an overall cost of the designed system.

Regarding claims 4, 5, 11, and 12, it would have been obvious to a person of ordinary skill in the art to select a minimum number of amplifiers by calculating an aggregate loss as taught by Ramamurthy et al. in the system disclosed by Cardwell et al. in order to minimize the cost of the designed network and also in order to advantageously reduce associated noise and maintenance considerations for each amplifier (Ramamurthy et al., page 756, second paragraph under section "B. Problem Definition").

Regarding claims 6 and 13, Cardwell et al. in view of Beine et al. and Ramamurthy et al. suggest a network designed by the methods of claims 5 and 12 as discussed above.

Regarding claim 35, Cardwell et al. in view of Beine et al. describe a system as discussed above with regard to claim 32. Cardwell et al. further disclose that design tool performs the steps of:

selecting a subset of optical amplifier placement configurations (page 5, paragraphs [0056]-[0058]);

analyzing quality of service for each optical amplifier placement configuration in the subset of optical amplifier placement configuration (Figure 5; page 3, paragraph [0026]; page 6, paragraph [0065] and [0068]; page 7, paragraphs [0071]-[0078]); and

selecting an optical amplifier placement configuration having a desired quality of service (page 8, paragraphs [0079]-[0082]).

As similarly discussed above with regard to claim 29, Cardwell et al. do not specifically disclose selecting a minimum number of amplifiers, but they do disclose attempting to minimize overall cost (page 2, paragraph [0021]), and it is well understood in the art that reducing the number of amplifiers would generally contribute to reducing an overall cost of the designed system.

Ramamurthy et al. teach a related system for designing an optical wavelength division multiplexing network (Abstract) including placing optical amplifiers, and they further teach minimizing the number of amplifiers placed in the network (Abstract, particularly lines 7-9; see also page 756, section "B. Problem Definition").

It would have been obvious to a person of ordinary skill in the art to select a minimum number of amplifiers as taught by Ramamurthy et al. in the system disclosed by Cardwell et al. in order to minimize the cost of the designed network and also in order to advantageously reduce associated noise and maintenance considerations for each amplifier (Ramamurthy et al., page 756, second paragraph under section "B. Problem Definition").

8. Claims 15-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cardwell et al. in view of Beine et al. and Ramamurthy et al.

Regarding claim 15, Cardwell et al. disclose a computer implemented method for designing a wavelength division multiplexed optical network (Figure 5), the method comprising:

providing an interface for a user to input an arrangement of optical nodes coupled by optical fiber spans (page 5, paragraphs [0055]-[0058]; page 6, paragraphs [0061]-0062]), each of the optical fiber spans having an associated optical fiber loss that is dependent upon its length and upon an attenuation characteristic of the span (page 7, paragraph [0076]);

the optical network having an associated multiplicity of possible optical amplifier placement configurations;

for each node of the optical network, configuring optical components of optical add/drop multiplexers to add, drop, and pass through optical wavelength channels according to a channel map for providing services in the optical network, the optical components of the node having an associated optical loss characteristic (page 6, paragraphs [0062]-[0064]);

selecting a set of optical amplifier placement configurations (page 7, paragraph [0076]; page 8, paragraphs [0079]-[0082]);

analyzing quality of service for each optical amplifier placement configuration in the set of optical amplifier placement configurations (page 6, paragraph [0065] and [0068]); and

selecting an optical amplifier placement configuration having a desired quality of service (page 8, paragraphs [0079]-[0082]).

Regarding claim 15, Cardwell et al. disclose that each node is capable of generally receiving amplifiers, but they do not specifically disclose pre-amplifiers and post-amplifiers. However, Beine et al. teach a related optical network with nodes coupled by fiber optic spans (Figure 21) and further teach nodes capable of receiving at least one optical pre-amplifier for

each input fiber and at least one optical post amplifier for each output fiber (such as amplifiers 2102 and 2106, for example; column 36, lines 38-53). It would have been obvious to a person of ordinary skill in the art to specifically have the nodes disclosed by Cardwell et al. capable of receiving both pre- and post-amplifiers as suggested by Beine et al. in order to provide more flexibility in the placement of the amplifiers and thereby better optimize the design of the network.

Further regarding claim 15, Cardwell et al. do not specifically disclose selecting a minimum number of amplifiers, but they do disclose attempting to minimize overall cost (page 2, paragraph [0021]), and it is well understood in the art that reducing the number of amplifiers would generally contribute to reducing an overall cost of the designed system.

Ramamurthy et al. teach a related system for designing an optical wavelength division multiplexing network (Abstract) including placing optical amplifiers, and they further teach minimizing the number of amplifiers placed in the network (Abstract, particularly lines 7-9; see also page 756, section "B. Problem Definition").

It would have been obvious to a person of ordinary skill in the art to select a minimum number of amplifiers as taught by Ramamurthy et al. in the system disclosed by Cardwell et al. in order to minimize the cost of the designed network and also in order to advantageously reduce associated noise and maintenance considerations for each amplifier (Ramamurthy et al., page 756, second paragraph under section "B. Problem Definition").

Regarding claim 27, Cardwell et all. in view of Beine et al. and Ramamurthy et al. suggest an optical network designed by the method of claim 15 as discussed above.

Regarding claim 16, Cardwell et al. disclose that selecting the set comprises:

selecting an optical power criterion for constraining placement of one or more optical amplifiers in the optical network, the optical power criterion being indicative of a sufficient minimum received power in at least one receiver (page 5, paragraph [0058]; page 6, paragraphs [0065] and [0068]);

placing at least one amplifier in accord with the optical power criterion to form an initial placement of amplifiers (page 7, paragraph [0076]); and

determining a set of amplifier placement configurations which are consistent with the initial placement of amplifiers (page 8, paragraphs [0079]-[0081])..

Regarding claim 17, Cardwell et al. disclose that selecting the set comprises:

for a node having at least one channel passing through the node, determining a pass-through optical loss associated with the at least one channel passing through the optical node;

responsive to the pass-through optical loss exceeding a threshold loss, placing at least one amplifier in the node (page 6, paragraph [0068].

Regarding claim 18, Cardwell et al. disclose that selecting the set comprises:

for at least one optical wavelength channel, forming an equivalent optical circuit model having an associated equivalent optical loss to couple a wavelength channel from a first node to a second node in the network; and responsive to the equivalent optical loss exceeding a threshold optical loss, placing an optical amplifier in at least one of the nodes (page 7, paragraph [0076]).

Regarding claim 19, Cardwell et al. disclose that the first and second nodes comprise an optical add/drop path, the minimum equivalent loss includes the losses along the add/drop path, and the optical amplifier is placed in one of the nodes along the add/drop path (page 7, paragraph [0076]).

Regarding claim 20, Cardwell et al. disclose that selecting the set comprises:

for at least one optical wavelength channel that is added and dropped, sequentially moving from an add node to each subsequent node along an optical path to a drop node;

at each node in the sequence of nodes along the optical path, determining if an optical amplifier is required to couple the optical wavelength signal to a subsequent node; and

responsive to determining that an optical amplifier is required to couple the optical wavelength channel to a subsequent node, placing an amplifier in a node location selected to couple the optical wavelength signal to the subsequent node (page 7, paragraph [0076]);.

Regarding claim 21, Cardwell et al. disclose:

performing a power analysis of the wavelength channel along the optical path for an initial optical amplifier configuration; and

responsive to the wavelength channel having a power level below a threshold power level in a node, placing an optical amplifier in a previous node (page 6, paragraph [0068]; page 7, [0076]).

Regarding claim 22, Cardwell et al. disclose that selecting the set comprises: placing amplifiers proximate high loss regions of the optical network (page 7, paragraph [0076]).

Regarding claim 23, Cardwell et al. disclose that selecting the set further comprises: eliminating from consideration amplifier configurations belonging to branches of a decision tree likely to have unacceptably low power for at least one wavelength channel in at least one node (page 6, paragraph [0068]; page 7, paragraphs [0076]-[0077]).

Regarding claim 24, Cardwell et al. disclose that selecting the set comprises:

placing an optical amplifier in a node, responsive to the optical loss of the node for at least one pass-through channel exceeding a first threshold loss; and

placing at least one amplifier proximate one end of a span responsive to determining a path loss for a wavelength channel added in a first node traveling along an optical path including the span to a second node exceeding a second threshold loss (page 7, paragraph [0076]).

Examiner notes that Cardwell et al. disclose placing optical amplifiers in nodes wherever the loss of a signal has exceeded a threshold loss for a given link. Different links would have different loss characteristics and so the system disclosed by Cardwell et al. is capable of placing an amplifier when the loss on one link has exceeded a first threshold and another amplifier when the loss on another link has exceeded a second threshold.

Regarding claim 25, Cardwell et al. disclose forming configurations having at least one additional optical amplifier (i.e., they disclose placing however many amplifiers as needed).

Regarding claim 26, Cardwell et al. in view of Beine et al. and Ramamurthy et al. describe a method as discussed above with regard to claim 15. Cardwell et al. do not specifically disclose selecting the amplifier placement by calculating an aggregate loss or determining an aggregate number of amplifiers.

However, Ramamurthy et al. teach a related system for designing an optical wavelength division multiplexing network (Abstract) including placing optical amplifiers, and they further teach minimizing the number of amplifiers placed in the network by calculating an aggregate loss of the network spans and nodes and determining an aggregate number of amplifiers required for the aggregate optical loss (Abstract, particularly lines 7-9; see also page 756, section "B. Problem Definition").

Cardwell et al. already disclose attempting to minimize overall cost (page 2, paragraph [0021]), and it is well understood in the art that reducing the number of amplifiers would generally contribute to reducing an overall cost of the designed system.

Regarding claim 26, it would have been obvious to a person of ordinary skill in the art to select a minimum number of amplifiers by calculating an aggregate loss as taught by Ramamurthy et al. in the method described by Cardwell et al. in view of Beine et al. and Ramamurthy et al. in order to minimize the cost of the designed network and also in order to advantageously reduce associated noise and maintenance considerations for each amplifier (Ramamurthy et al., page 756, second paragraph under section "B. Problem Definition").

Conclusion

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christina Y. Leung whose telephone number is 571-272-3023. The examiner can normally be reached on Monday to Friday, 6:30 to 3:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on 571-272-3022. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 571-272-2600.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR

system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Christina Y Leung
Christina Y Leung
Patent Examiner
Art Unit 2633